

Undergraduate Research Internship

Project: Literature Review on the Effects of Multiple Global Change Drivers in Tropical Terrestrial Ecosystems

Faculty Mentor: Noelle Beckman, PhD

PhD Researcher Mentor: Beatriz Tristão, MSc (PhD Student, Seedscape Ecology Research Group)

Project Description

This internship will contribute to an ongoing PhD project in the Seedscape Ecology Research Group that investigates how multiple global change drivers (such as climate change, land-use change, and atmospheric alterations) interact to affect the resilience of tropical terrestrial ecosystems. Understanding these complex interactions requires an extensive review of existing literature, supported by modern tools for synthesis and analysis.

The Undergraduate Research Intern will be trained in the literature review process in ecology and global change research, while gaining hands-on experience with artificial intelligence-based tools that support literature reviews.

Duration

- **Initial Commitment:** 2 months (flexible, approximately 5-10 hours/week)
- **Extension:** Possible extension to enroll in research credit for the Spring if the Intern develops interest in pursuing an independent undergraduate-level research project related to the topic, using ecological modeling or experimental methods.

Responsibilities of the Undergraduate Research Intern

- Explore and evaluate scientific literature on global change drivers in tropical terrestrial ecosystems.
- Assist in paper selection and screening for systematic review using platforms such as **Covidence**.

- Extract and organize key data and findings using **NVivo** for qualitative synthesis.
- Experiment with AI-based tools to support efficient literature screening and thematic analysis.
- Participate in weekly meetings with the PhD mentor to discuss progress, challenges, and new insights.

Learning Outcomes and Skills Gained

By the end of the Internship, the Intern will:

- Understand the process of conducting systematic literature reviews in ecology.
- Develop skills in evaluating and synthesizing primary research articles.
- Gain hands-on experience with specialized research software (Covidence, NVivo, AI-assisted review tools).
- Strengthen critical thinking and scientific writing skills.
- Be exposed to current debates in global change ecology, with a focus on tropical ecosystems.

If the Internship is extended, the Intern will also have the opportunity to:

- Develop and pursue a small, independent research project (modeling or experimental).
- Potentially contribute to a publication or conference presentation.

Mentorship and Training Plan

The Intern will work closely with PhD student Beatriz Tristão under the guidance of the Seedscape Ecology Research Group PI Beckman. Training sessions will be provided for all software and methods used. Progress will be monitored through weekly meetings and task check-ins, ensuring the Intern receives continuous support and feedback.

With regular meetings with the mentoring team, the Intern will receive guidance and skill development related to research comprehension and communication, practical research skills, research ethics, and professional career development. Through the mentoring experience, mentees will develop a research identity and gain confidence and independence in conducting research. For example, mentors will share opportunities and

provide guidance to apply for independent funding (e.g. URCO) depending on the interest of the Intern

Expected Impact

This Internship provides an opportunity for an undergraduate student to gain early exposure to evaluating primary literature, ecological research, global change science, and AI-based research technologies. It will contribute directly to advancing a PhD-level project while offering the Internship valuable skills generally applicable to future academic or professional careers in STEM-related fields and specifically in ecology and environmental science related fields.